# *Legal Issues in Modern Software Development*

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# Today's Speakers

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# Agenda

- **Software Development Project Management Models**
  - Introduction: Software Development Models
  - Agile Contracting Considerations
- **Open-Source Software**
  - Introduction: Open-Source Software
  - Open-Source Software in Development
- **Artificial Intelligence**
  - Introduction: G A.I., M.L. and L.L.M.
  - Risks in Using A.I. in Development

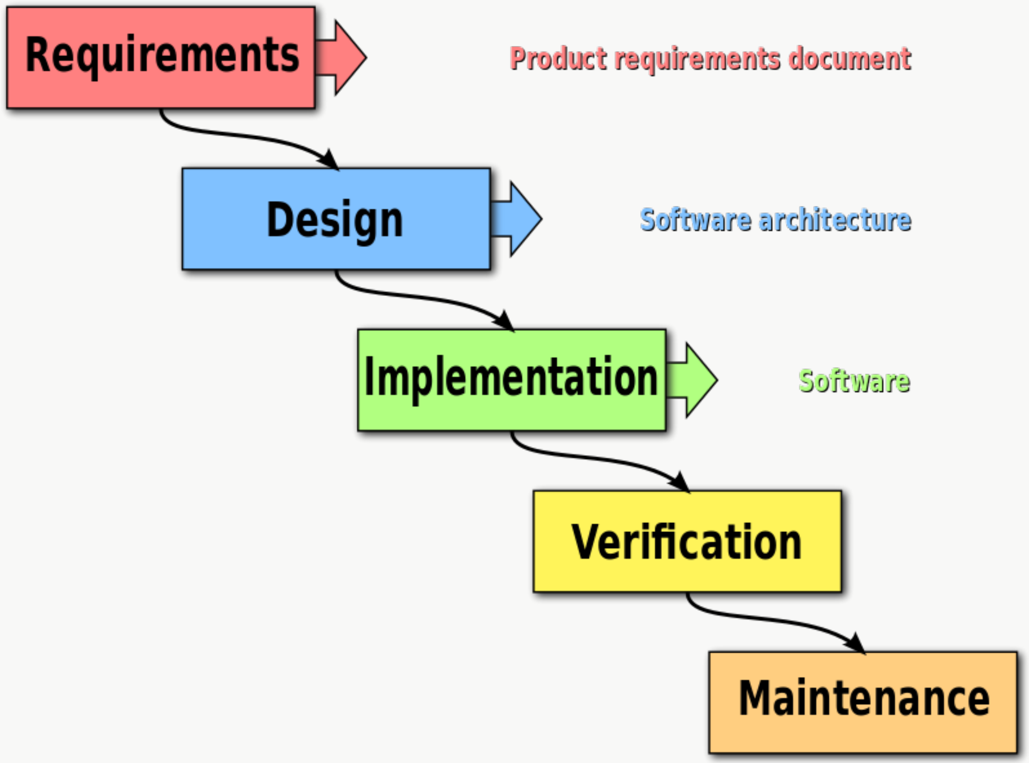
# Software Development Project Management Models

# Introduction: Software Development Models

# Traditional Development Model

The "Waterfall Model"

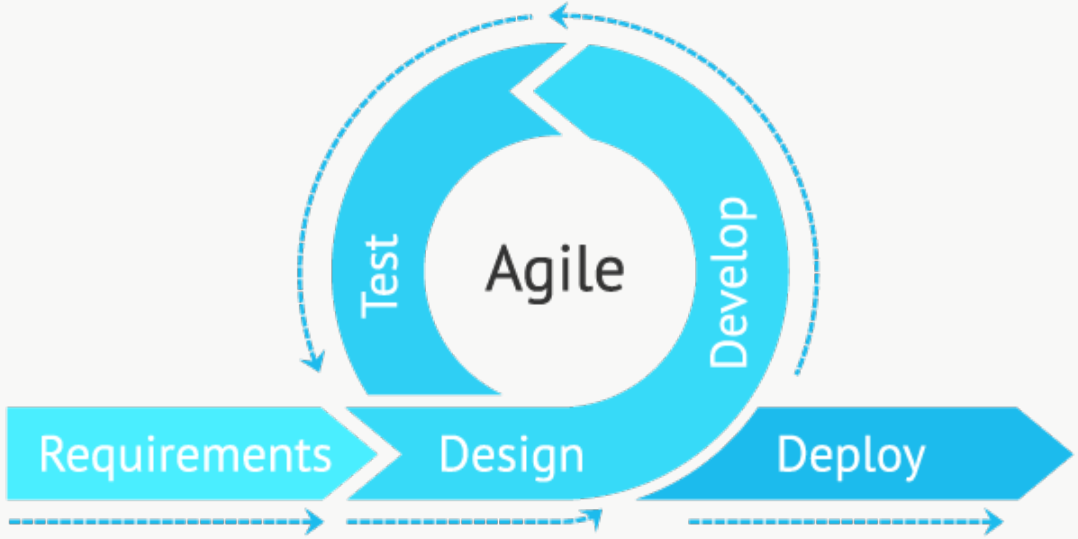
- Series of distinct and linear project phases
- Assumption that the ultimate deliverable can be clearly defined
- Lends itself to identifying clear milestones for tracking progress



# Agile Development Model

The “Agile Model”

- Breaking down project into small working cycles (“**Sprint**”)
- Iterative and incremental development
- Constant delivery of working software
- Reassessment of milestones and requirements



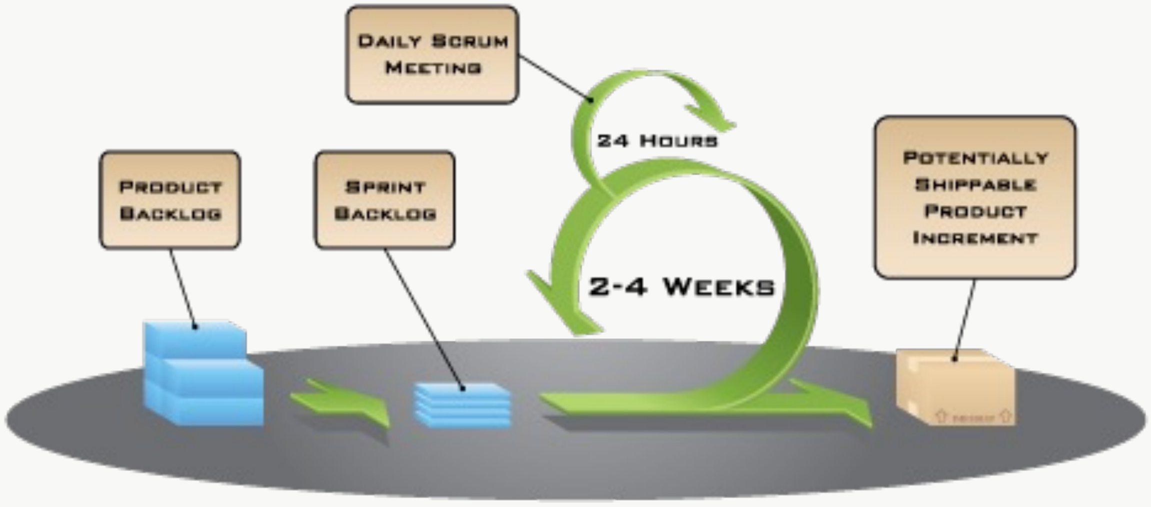
# Agile in More Detail

**Product Vision** – high-level goals of the project set at the beginning

**Product Backlog** – prioritized list amended throughout the project of the items required for development

**Sprint Backlog** – subset of the Product Backlog and the to-do list for the particular Sprint

**Sprint** – fixed duration of development which cannot be extended



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# Three Key Agile Personnel

**Product Owner**

- Key point of contact on customer side
- Participates in Sprint meetings
- Takes primary responsibility for Product Backlog
- Can amend Product Backlog

**Dev Team**

- Responsible for software development during the Sprints
- Participates in sprint meetings

**Scrum Master**

- Facilitator of the Agile process
- Usually a member of the Vendor’s team
- *Not* a project manager

# Defining Done

- Goal of a Sprint is to deliver workable software code
- Options for establishing "Definition of Done":
  - Code has passed predetermined testing
  - Code is interoperable with larger components
  - Any coding standards have been met

# Agile Contracting Considerations

# Hypothetical Example

- Customer wishes to purchase code from a third-party developer for use internally and possible resale.
- The vendor proposes that the project be managed using agile methodology.
- How should each party address contractual terms?

# Pricing

Waterfall Development

- Fixed specifications means fixed price

Agile Development

- **Iterative specifications means alternative models:**
    - **Time & Materials**
    - **Time & Materials capped per Sprint**
    - **Fixed price per Sprint**
    - **Value-based pricing**

# Warranties

Waterfall Development

- Qualified personnel
- Services performance in accordance with industry standards
- Non-infringement of IP
- Conformity to specification

Agile Development

- Qualified personnel
- Services performance in accordance with industry standards
- Non-infringement of IP
- **Component interoperability with the larger project**
- **Personnel continuity**

# Termination Rights

### Waterfall Development

- Standard mutual termination rights (breach, bankruptcy, etc.)
- Generally, no customer termination for convenience right with fixed price

### Agile Development

- Standard mutual termination rights (breach, bankruptcy, etc.)
- **Customer termination for convenience more delicate issue**

# Testing & Acceptance

## Waterfall Development

- Defined specifications means objective testing criteria
- Strict acceptance criteria

## Agile Development

- **Overall project specifications are iterative and not static**
- **Testing and acceptance criteria must accommodate fluid specifications**
- **Each Sprint should have general pre-defined requirements for testing and acceptance**

# Governance & Dispute Resolution

## Waterfall Development

- Ad-hoc governance meetings
- Strict testing/acceptance helps to avoid disputes
- Collaboration between business, legal and dev teams not essential

## Agile Development

- **Frequent cadence of governance meetings**
- **More potential for disputes since testing/acceptance is less strict**
- **Business, legal, and dev teams collaborate and trust each other**

# Intellectual Property

## Waterfall Development

- Customer owns all developed IP
- Each party retains ownership of background IP
- Vendor may own residual rights

## Agile Development

- Customer owns all developed IP
- Each party retains ownership of background IP
- Vendor may own residual rights
- **Customer owns Product Backlog and Product Vision**

# IP Ownership: SaaS vs License

### Subscription as a Service

- Subscription model that applies to all customers
- IP is owned by the software company/vendor
- Each party retains ownership of background IP
- Customer may request source code escrow

### License

- Generally made for a single customer’s deployment
- Customer owns all developed IP

# Agile Development Contracting Tips

- Structured Governance
- Due Diligence on Dev team
- Key Personnel Continuity
- Gating Mechanism for Fees and Milestones
- Termination for Convenience

# Open-Source Software

# Introduction: Open-Source Software

# General Principles

- Promotes free use of software in unified structure
- Allows for faster development and evolution

Proprietary Software

- Not free to use
- Restrictions on reverse engineering, modification, and distribution

Open-Source Software

- Free to use
- Attribution requirements
- Certain obligations for use, modification, and distribution

# Types of Open-Source Licenses

| License Type | Restrictiveness |
|---|---|
| Public Domain | No restrictions |
| Permissive (Apache-, BSD- or MIT-style license) | Few restrictions (attribution) |
| Copyleft (Reciprocal or restrictive (GPL, Affero)) | More restrictions (source code disclosure) |

# Copyleft Open-Source

Copyleft Open-Source License Examples:

| *Strong* | *Weak* |
|---|---|
| GPL v2 | Lesser GPL (LGPL) |
| GPL v3 | Eclipse Public License (EPL) |
| Affero | Mozilla Public License (MPL) |

Requirements:

- Any derivative works based on the original software component must also be licensed under the same OSS license

# Open-Source Software in Development

# Open-Source and Agile Development

Benefits of Open-Source in Agile:

- Increase efficiency by leveraging existing code bases

Risks of Open-Source in Agile:

- Inclusion of copyleft software

Mitigation:

- Governance and oversight
- Tools for management of OSS (e.g., Sonatype / Snyk)

# Open-Source and Community Development

Community Model:

- Company provides an open-source component to the public
- Invites developers to contribute to the software to encourage adoption

Potential Concerns:

- Who owns the contributions?
- Who is liable for the component?

# Managing Open Source Ingestion

- Documentation and OSS Audits
- Disclosure of OSS components by vendor
- Risks of Poor OSS Management

# Artificial Intelligence

# Introduction: G A.I., M.L. and L.L.M.

# G A.I., M.L. and L.L.M.

Generative Artificial Intelligence

(G A.I.)

Intelligent machines that can perform tasks that typically require human intelligence.

Machine Learning

(M.L.)

Computers programed to continuously learn patterns and make predictions from data.

Subset of A.I.

Large Language Models

(L.L.M.)

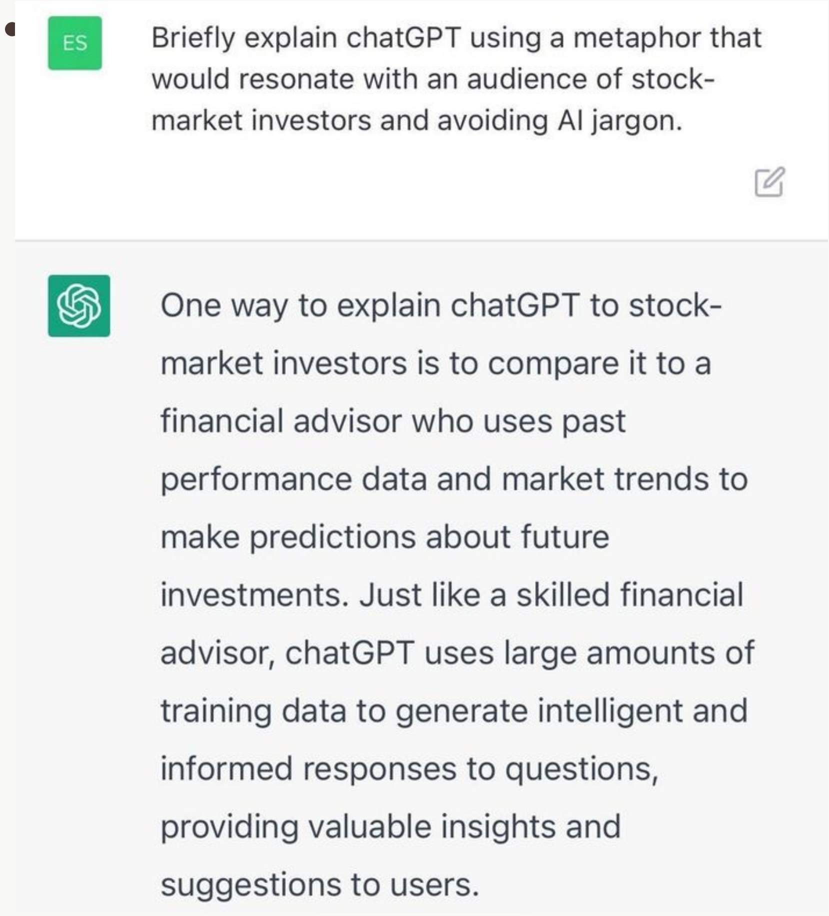
Powerful A.I. models that understand and generate human-like text.

GPT-4 is one of the most popular LLMs

Subset of M.L.

# GPT-4/ChatGPT; Google Bard, etc.

- GPT-4 is the latest L.L.M. engine from OpenAI. It powers ChatGPT, Bing Chat and other chatbots. Bard is Google’s version
- **Input**: A human user types a message to the chatbot in the form of a question, request, prompt or pasted text
- **Output**: ChatGPT produces textual output including prose, poetry, source code, tables etc.



Briefly explain chatGPT using a metaphor that would resonate with an audience of stock-market investors and avoiding AI jargon.

One way to explain chatGPT to stock-market investors is to compare it to a financial advisor who uses past performance data and market trends to make predictions about future investments. Just like a skilled financial advisor, chatGPT uses large amounts of training data to generate intelligent and informed responses to questions, providing valuable insights and suggestions to users.

# Risks in Using A.I. in Development

# Confidentiality

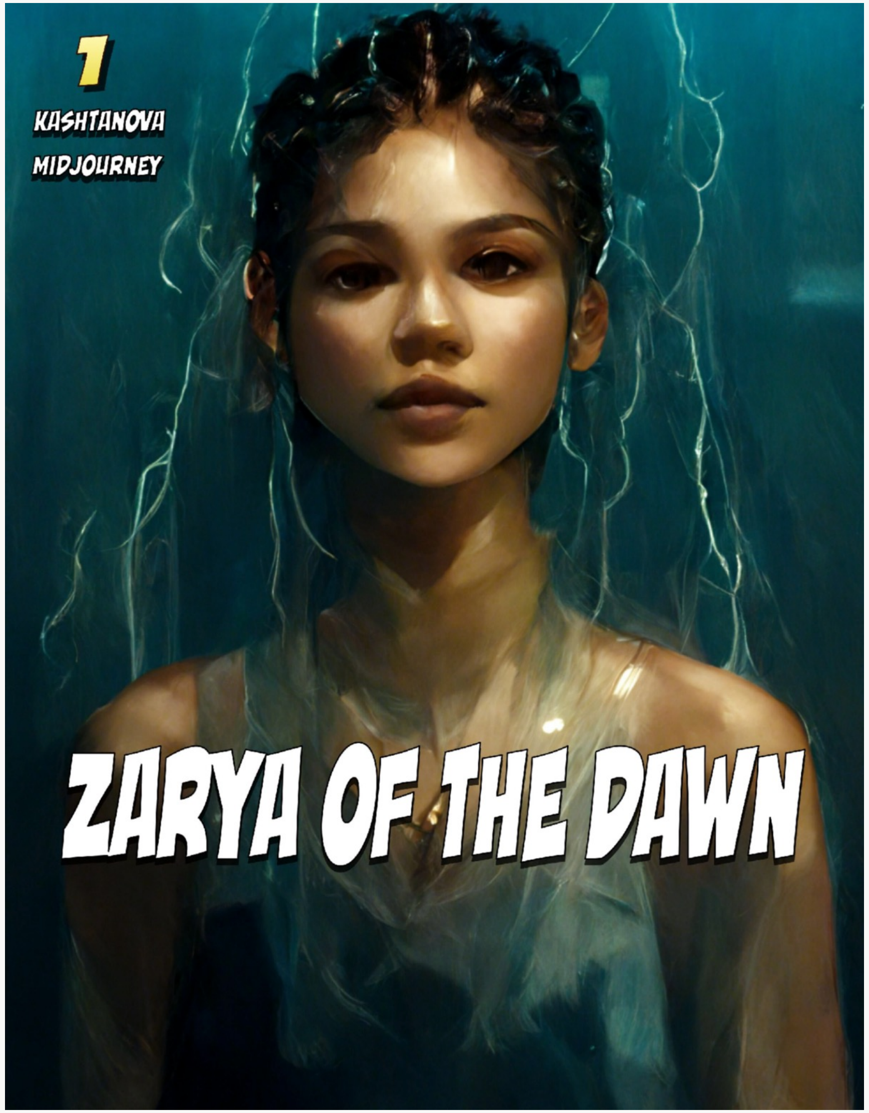
– ChatGPT and other A.I. engines are under no confidentiality obligations

– Any input containing confidential information could be reproduced as part of an output to another user

– No exclusivity in outputs

# A.I. Works & Copyright Protection

- AI-powered text-to-image tools include Midjourney, Dall-E and Stable Diffusion
- The Copyright Act protects "original works of authorship" that are fixed in a tangible medium of expression
- The U.S. Copyright Office has read a **human-authorship requirement** into the statute
- U.S. Copyright Office has refused protection for A.I.-generated outputs



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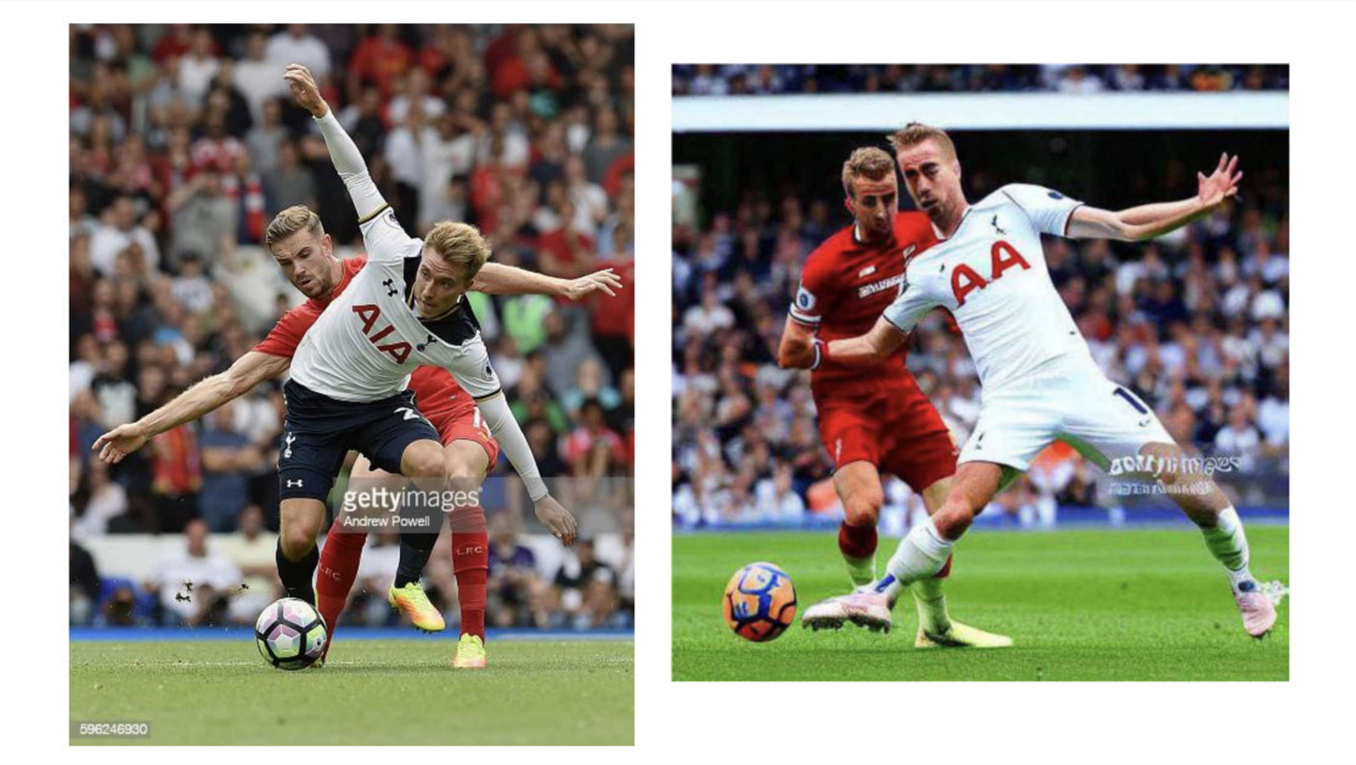
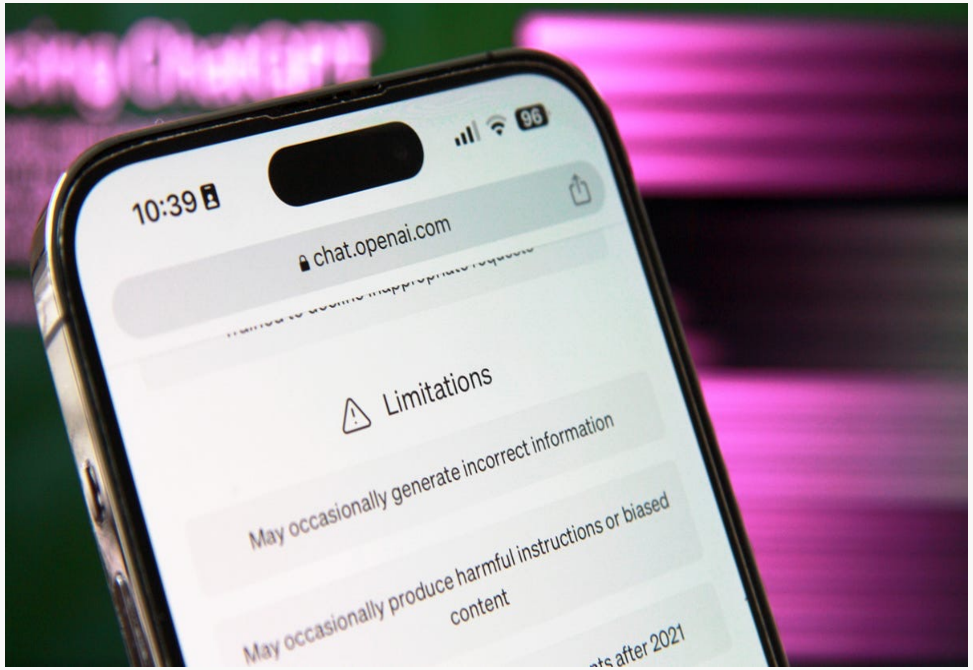
# Intellectual Property Infringement

- A.I.-generated outputs may infringe the IP rights of third parties
- *Getty Images, Inc. v. Stability AI, Inc.*



# Common Pitfalls of A.I.

- **Hallucinations**: A.I. can simply state objectively incorrect facts
- **Lack of Transparency**: Outputs are generated via "black boxes" and without justification


10:39
chat.openai.com
Limitations
May occasionally generate incorrect information
May occasionally produce harmful instructions or biased content
ts after 2021

# Managing AI Risks

- Confidentiality and Data Privacy
- Employment and Regulatory Issues
- Third-Party IP Infringement
- Security Vulnerability

# Questions

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